

Notice of Allowability

Application No.

09/494,282

Examiner

Shubo (Joe) Zhou

Applicant(s)

SELIFONOV ET AL.

Art Unit

1631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 8/13/04.
2. ☒ The allowed claim(s) is/are 99-101, 105-112.
3. ☒ The drawings filed on 19 September 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 3/12/04, 5/10/04, 10/4/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Examiner's Amendment

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Jeff Weaver on 11/24/04.

In the specification:

On page 1, delete the two paragraphs from line 18 to line 32, and replace with the following paragraph:

-- This application is also a continuation-in-part of USSN 09/408,392, filed September 28, 1999, now US patent 6,376,246, which claims the benefit of USSN 60/118,813, filed February 5, 1999, and USSN 60/141,049, filed June 24, 1999. This application is also a continuation-in-part of USSN 09/416,837, filed October 12, 1999, now abandoned. --

On page 2, delete the first paragraph from line 1 to line 3, and replace with the following paragraph:

-- This application is also related to USSN 09/408,393, filed September 28, 1999, now US patent 6,436,675. --

On page 10, line 5, after "e.g.," delete "GenbankTM" and insert therefor -- GENBANKTM

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On page 21, line 5, after "09/408,392", insert -- , now US patent 6,376,246 --.

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On page 21, line 7, after "09/408,393", insert -- , now US patent 6,436,675 --.

In the claims:

In claim 99:

line 18, after "a crossover point", delete ".", and insert -- , and --,

after line 18, insert a new line -- (e) synthesizing the set of oligonucleotides

selected from the derivative character strings to be used for a physical recombination procedure.

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In claim 101:

line 2, after "genetic operator to the", delete "one", and insert therefore -- two --.

In claim 105:

line 18, after "a crossover point", delete ".", and insert -- , and --,

after line 18, insert a new line -- (e) synthesizing the set of oligonucleotides

selected from the derivative character strings to be used for a physical recombination procedure.

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In claim 107:

line 2, after "genetic operator to the", delete "one", and insert therefore -- two --.

In claim 112:

line 15, after "a crossover point", delete ".", and insert -- , and --,

after line 15, insert a new line -- (d) synthesizing the set of oligonucleotides

selected from the derivative character strings to be used for a physical recombination procedure.

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Reasons for Allowance

The following is an examiner's statement of reasons for allowance:


The claimed invention is directed to a method of identifying and synthesizing a set of oligonucleotides for physical recombination comprising providing two or more parental character strings, aligning the sequences to identify pairwise homologies, manipulating the sequences by applying a genetic operator such as crossover operator to generate derivative character strings, selecting a set of character substrings from the derivative strings, and synthesizing the set of oligonucleotides to be used for in vitro physical recombination. The closest prior art is Stemmer, W.P.C. (IDS document: Proc. Natl. Acad. Sci. USA, Vol. 91, pages 10747-10751, 1994) who discloses a method of in vitro recombination by DNA shuffling. Stemmer provides in Fig. 5 two parental character strings, aligns the strings and indicates the areas of homology and heterology between the strings, and indicates the positions of crossover between the two strings. However, the crossover points between the character strings were provided only after the the crossover (recombination) events occurred and recombinants were sequenced, whereas the instant claims apply the genetic operators first to the two or more parental character strings first to generates crossover oligonucleotides and synthesize the oligonucleotides for further in vitro physical recombination.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

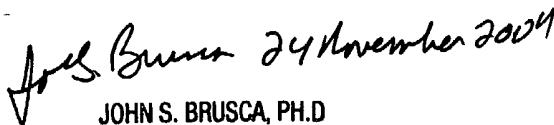
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shubo (Joe) Zhou, whose telephone number is 571-272-0724. The examiner can normally be reached Monday-Friday from 8 A.M. to 4 P.M. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward, Ph.D., can be reached on 571-272-0722. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to Patent Analyst Tina Plunkett whose phone number is (571) 272-0549.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public. For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

Shubo (Joe) Zhou, Ph.D. 

Patent Examiner


JOHN S. BRUSCA, PH.D.
PRIMARY EXAMINER